the inner surface of the rotor to the outer surface of the rotor; and

a magnet structure constructed and arranged within each of said slots such that said magnet structure also has a width varying along the direction from the inner surface of the rotor to the outer surface of the rotor.

36. The multi-pole rotor according to claim 35, wherein said magnet structure comprises one or more permanent magnets.

37. The multi-pole rotor according to claim 35, wherein the width of said slots varies in a continuous manner in the direction from the inner surface of the rotor to the outer surface of the rotor.

38. The multi-pole rotor according to claim 35, wherein the width of said slots varies in a stepwise manner in the direction from the inner surface of the rotor to the outer surface of the rotor.

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39. The multi-pole rotor according to claim 35, wherein said magnet structure comprises at least two permanent magnets disposed immediately adjacent to each other each having a rectangular cross section.

40. The multi-pole rotor according to claim 35, further comprising at least one non-magnetic structure disposed within each of said ferromagnetic pole segments.

41. The multi-pole rotor according to claim 35, further comprising a squirrel cage disposed on the outer surface of the rotor.

42. The multi-pole rotor according to claim 35, wherein said magnet structure comprises:

a squirrel cage portion; and

at least one permanent magnet having a rectangular cross section.

43. The multi-pole rotor according to claim 35, wherein said magnet structure comprises:

a squirrel cage portion; and

at least one permanent magnet having a width varying along the direction from the inner surface of the rotor to the outer surface of the rotor.

44. A multi-pole rotor of an electric machine, comprising:

ferromagnetic pole segments each extending in a radial direction from an inner surface of the rotor to an outer surface of the rotor;

slots separating each of said ferromagnetic pole segments, each of said slots extending radially from the inner surface of the rotor to the outer surface of the rotor, each of said slots having a radial slot height defined along a direction from the inner surface of the rotor to the outer surface of the rotor, and each of the slots also having a width varying along said slot height in a stepwise manner such that a first slot portion extends entirely from the inner surface of the rotor to the outer surface of the rotor and at least a second slot portion extends from the outer surface of the rotor but not entirely to the inner surface of the rotor; and

a magnet structure constructed and arranged within each of said slots, said magnet structure comprising a first permanent magnet having a rectangular cross-section disposed within the first slot portion and at least a second permanent magnet having a rectangular cross-section disposed within the second slot portion.

45. A multi-pole rotor of an electric machine, comprising:

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ferromagnetic pole segments each extending in a radial direction from an inner surface of the rotor to an outer surface of the rotor;

slots separating each of said ferromagnetic pole segments, each of said slots extending radially from the inner surface of the rotor to the outer surface of the rotor, each of said slots having a radial slot height defined along a direction from the inner surface of the rotor to the outer surface of the rotor, and each of the slots also having a continuously varying width along said slot height such that the slot width increases radially along the direction from the inner surface of the rotor to the outer surface of the rotor; and

a magnet structure constructed and arranged within each of said slots, said magnet structure also having a continuously varying width along the direction from the inner surface of the rotor to the outer surface of the rotor.

46. The multi-pole rotor according to claim 45, further comprising a non-magnetic wedge disposed within each of said ferromagnetic pole segments.

47. A multi-pole rotor of an electric machine, comprising:

ferromagnetic pole segments each extending in a radial direction from an inner surface of the rotor to an outer surface of the rotor;

slots separating each of said ferromagnetic pole segments, each of said slots extending radially from the inner surface of the rotor to the outer surface of the rotor, each of said slots having a radial slot height defined along a direction from the inner surface of the rotor to the outer surface of the rotor; and

a magnet structure constructed and arranged within each of said slots, said magnet structure comprising a squirrel cage portion disposed along the outer surface of the rotor and a permanent magnet having a rectangular cross-section

extending from the squirrel cage portion to the inner surface of the rotor.

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48. A multi-pole rotor of an electric machine, comprising:

ferromagnetic pole segments each extending in a radial direction from an inner surface of the rotor to an outer surface of the rotor;

slots separating each of said ferromagnetic pole segments, each of said slots extending radially from the inner surface of the rotor to the outer surface of the rotor, each of said slots having a radial slot height defined along a direction from the inner surface of the rotor to the outer surface of the rotor; and

a magnet structure constructed and arranged within each of said slots, said magnet structure comprising a squirrel cage portion disposed along the outer surface of the rotor and a permanent magnet extending from the squirrel cage portion to the inner surface of the rotor and varying in width from the squirrel cage portion to the inner surface of the rotor.

49. A method of operating an electric machine, the electric machine having a multi-pole rotor, a stator and a corresponding stator winding radially disposed with respect to the rotor, the method comprising:

applying a first current component through the stator winding to magnetically couple the stator to the multi-pole rotor, the multi-pole rotor having ferromagnetic pole segments each extending from an inner surface of the rotor to an outer surface of the rotor, slots separating each of said ferromagnetic pole segments, each of said slots extending from the inner surface of the rotor to the outer surface of the rotor, and each of said slots also having a width varying along a direction from the inner surface of the rotor to the outer surface of the rotor, and a magnet structure constructed and arranged within each of said slots such that said magnet structure also has a width varying along the direction from

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the inner surface of the rotor to the outer surface of the rotor; and

applying a second current component through the stator winding to remagnetize a portion of the magnet structure closest to the inner surface of the rotor.

50. A multi-pole rotor of an electric machine, comprising:

iron pole segments each extending from an inner surface of the rotor to an outer surface of the rotor;

slots separating each of said ferromagnetic pole segments, each of said slots also extending from the inner surface of the rotor to the outer surface of the rotor; and

a tangentially magnetized magnet structure constructed and arranged within each of said slots, said tangentially magnetized magnet structure extending in the direction from the inner surface of the rotor to the outer surface of the rotor; and

magnetic field generating means disposed within or in the proximity of each of said iron pole segments for minimizing effects of armature reaction attributable to a corresponding stator of the electric machine.

51. The multi-pole rotor according to claim 50, wherein said magnetic field generating means comprises an auxiliary field magnetic structure disposed within each of said iron pole segments and extending from an inner surface of the rotor to an outer surface of the rotor.

52. The multi-pole rotor according to claim 50, wherein said magnetic field generating means comprises a coil disposed around each of said iron pole segments.

53. The multi-pole rotor according to claim 50, further comprising a radially magnetized permanent magnets disposed along the inner surface of the rotor and in communication with the tangentially magnetized permanent magnets.